

UNCLASSIFIED

PROCESSING DATE--04DEC70

2/3 021

CIRC ACCESSION NO--AP0140303

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BY THE ACTION OF HNO SUB3 OF DIFFERENT CONCNS. (3, 50, AND 100PERCENT) ON IODOIMIDAZOLES, IODINE IS SUBSTITUTED BY THE NO SUB2 GROUP AT THE 2 POSITION, WHICH IS INACTIVE IN ELECTROPHILIC SUBSTITUTIONS IN ACID MEDIUM; 3PERCENT HNO SUB3 DOES NOT GIVE ANY NITRO DERIV. WITH TRIIODOIMIDAZOLES. HNO SUB3-H SUB2 SO SUB4 ALSO SUBSTITUTES IODINE, BUT AT THE 4(5) POSITION. 2,4(5),DINITRO,5(4),IODOIMIDAZOLE (I) WAS PREPD. BY THE FOLLOWING 4 NITRATION ROUTES: (A) 2,4,5,TRIIODOIMIDAZOLE (II) (M. 191-2DEGREES) (1 G) WAS ADDED TO 40 ML HOT HNO SUB3 (D 1.32), AND THE MIXT. BOILED UNTIL IODINE VAPOR CEASED TO EVOLVE; THE REACTION MIXT. FROM 14 RUNS, COMBINED AND WORKED UP, GAVE 8 G I, M. 216-18DEGREES; (B) 1,2,4,5,TETRAIODOIMIDAZOLE (III) (0.8 G) WAS BOILED WITH 50 ML HNO SUB3 (D 1.32) TILL IODINE CEASED TO EVOLVE; III WENT INTO SOLN., AND A YELLOW PPT. OF 1,2,5(5),TRIIODO,5(4), NITROIMIDAZOLE (IV) FORMED, WHICH IN TURN ALSO WENT INTO SOLN. SLOWLY; WORKUP GAVE 0.2 G I; (C) REACTION OF 2,4(5),DIIODOIMIDAZOLE WITH HNO SUB3 IN CONDITIONS ANALOGOUS TO (A) GAVE 40PERCENT I; (D) SIMILARLY, TREATING 0.43 G 2,3,DIIDO,5,NITROIMIDAZOLE (V) WITH 20 ML HNO SUB3 GAVE 70PERCENT I. SLOW HEATING OF 1 G II WITH 40 ML HNO SUB3 (D 1.32) GAVE 0.22 G IV, M. 350DEGREES. ADDN. OF 5.7 G IV TO 100 ML 10PERCENT KI CAUSED DISSOLN. AND EVOLUTION OF IODINE; WORKUP GAVE 1.9 G V M. 225-6.5DEGREES, ALSO PREPD. IN 55PERCENT YIELD BY ADDING DROPWISE 0.4 ML HNO SUB3 (D 1.5) TO A COOLED SOLN. OF 4.46 G II IN 40 ML CONCD. H SUB2 SO SUB4, DECOMPG. THE REACTION MIXT. WITH H SUB2 O, AND WASHING WITH KI SOLN. TO REMOVE IODINE.

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3/3 021

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PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AF0140303

ABSTRACT/EXTRACT--A MIXT. OF 5 G I AND 40 ML HNO SUB3 (D 1.5) WAS BOILED 10 MIN TO GIVE 67PERCENT 2,4,5,TRINITROIMIDAZOLE M. 232-5DEGREES, ALSO OBTAINED FROM II AND III IN 26 AND 15PERCENT YIELDS, RESP., BY SIMILAR TREATMENT. TO A SOLN. OF 3.2 G 2,4(5),DIIDOIMIDAZOLE IN 40 ML CONCD. H SUB2 SO SUB4 WAS ADDED DROPWISE IN THE COLD 0.4 ML HNO SUB3 (D 1.5) TO GIVE 1.5 G 2,1000,4(5),NITROIMIDAZOLE (VI), M. 277-80DEGREES, ALSO OBTAINED IN 40PERCENT YIELD BY ADDING 3 ML HNO SUB3 (D 1.5) DROPWISE TO A SOLN. OF 0.5 G 2,IDOIMIDAZOLE IN 30 ML CONCD. H SUB2 SO SUB4, THEN HEATING TO 170DEGREES. HEATING VI 20 MIN AT 180DEGREES WITH H SUB2 SO SUB4,HNO SUB3 NITRATING MIXT. GAVE 20PERCENT 4,5,DINITROIMIDAZOLE, M. 187-8DEGREES. FACILITY: INST. ORG. KHIM. IM. ZELINSKOGO, MOSCOW, USSR.

UNCLASSIFIED

1/2- 031  
UNCLASSIFIED  
PROCESSING DATE--23OCT70  
TITLE--REACTION OF BIS(TRINITROMETHYL)MERCURY WITH DIAZO COMPOUNDS -U-  
AUTHOR--(05)-FRIDMAN, A.L., IVSHIN, V.P., IVSHINA, T.N., TARTAKOVSKIY,  
V.A., NOVIKOV, S.S.  
COUNTRY OF INFO--USSR  
SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (3), 729  
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ORGANIC NITRO COMPOUND, ORGANOMERCURY COMPOUND, AZO COMPOUND,  
NITRILE, ORGANIC SYNTHESIS, COMPLEX COMPOUND, IR SPECTRUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--2000/0747

STEP NO--UR/0062/70/000/003/0729/0729

CIRC ACCESSION NO--AP0124417  
UNCLASSIFIED

2/2 031

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0124417

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MIXING ((O SUB2 N) SUB3 C) SUB2 HG (I) WITH PH SUB2 CN SUB2 OR DIAZOFLUORENE IN ET SUB2 O GAVE HG, N, AND 14PERCENT PH SUB2 C:C(NO SUB2) SUB2, M. 148-9DEGREES, OR 43PERCENT 1,1,DINITRODIPHENYLENEETHENE, M. 184-5DEGREES, ALONG WITH PH SUB2 CO OR FLUORENONE, RESP. THUS I MAY BE USED FOR SYNTHESIS OF GEN DINITROALKENES. THE LATTER WERE ALSO FORMED FROM SIMILAR REACTION OF I DIOXANATE, BUT THE EVOLUTION OF N IN THIS CASE WAS LESS ENERGETIC. ATTEMPTS TO USE A MORE STABLE DIAZO COMPO., SUCH AS DIAZODIMEDONE, GAVE ONLY ITS 1:1 COMPLEX WITH I, M. 129-30.5DEGREES, WHOSE IR SPECTRUM WAS DESCRIBED. FACILITY: INST. ORG. KHIM. IM. ZELINSKOGO, MOSXOW, USSR.

UNCLASSIFIED

1/2 019 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--N,HALO,N,NITRAMINES. 1. SYNTHESIS AND SOME PROPERTIES OF  
N,CHLORO,N,NITRAMINES -U-  
AUTHOR--(03)-IVSHIN, V.P., FRIDMAN, A.L., NOVIKOV, S.S.  
COUNTRY OF INFO--USSR  
SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (3), 640-4  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--NITRATION, ORGANIC NITRO COMPOUND, CARBAMATE, AMINE, CHEMICAL  
SYNTHESIS, CHLORINATED ORGANIC COMPOUND  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1999/1785 STEP NO--UR/0062/70/000/003/0640/0644  
CIRC ACCESSION NO--AP0123582  
UNCLASSIFIED

2/2 019 UNCLASSIFIED PROCESSING DATE--23OCT70  
 CIRC ACCESSION NO--AP0123582  
 ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. NITRATION OF  
 ((3,3,DINITROBUTYL)METHYL) CARBAMATE AND HYDROLYSIS OF THE PRODUCT WITH  
 NH SUB4 OH GAVE 74PERCENT 3,3,DINITROBUTYLNITRAMINE, M. 38DEGREES.  
 SIMILARLY WAS PREPD. FROM 2,2,DIAMINODIETHYL ETHER 85PERCENT 2,2 PRIME  
 DINITRAMINODIETHYL ETHER, M. 65-6DEGREES. PASSING CL INTO A SOLN. OF A  
 NITRAMINE IN AQ. NAOH AT 0-50DEGREES AND SEPN. OF THE PPT. PERIODICALLY  
 GAVE THE FOLLOWING: (SHOWN ON MICROFICHE). I AND NAN SU33 IN H SUB2  
 O,ME SUB2 CO GAVE AFTER LOSS OF GASEOUS PRODUCTS 53PERCENT (CH SUB2 NHNO  
 SUB2) SUB2, M. 176DEGREES. I HEATED IN ETOH GAVE 100PERCENT SAME  
 PRODUCT; AT ROOM TEMP. REACTION WITH ETOH REQUIRED 1-2 HR. I AND  
 36PERCENT FORMALIN AT 70DEGREES 5 MIN GAVE 96PERCENT (CCH SUB2,N(NO  
 SUB2) CH SUB2 OH) SUB2, M. 82-4DEGREES; REACTION WITH 10PERCENT CH SUB2  
 O GAVE HN(NO SUB2) CH SUB2 CH SUB2 N(NO SUB2) CH SUB2 OH.  
 FACILITY: INST. ORG. KHIM. IM. ZELINSKOGO, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 681.178.9

KASHchEYeV, A. M., KISELEV, V. M., LETYAGIN, Yu. V., NOVIKOV, V. A.,  
ROZANOV, Ye. V., ROZENKRANTS, Yu -K. V. and SHAPIRO, B. I.

"A Device for Recording Pulse Signals"

USSR Author's Certificate, Class G 01 d 9/36, G 06 m 3/00, No 334478, filed  
25 Dec 70, published 23 May 72 (from RZh-Avtomatika Telamechanika i Vychislitel'-  
naya Tekhnika, No 3, Mar 73, Abstract No 3 A378 P)

Translation: A device is proposed for recording pulse signals, containing  
"AND" circuits and an "OR" circuit, the latter attached to a decoder connected  
with electromagnetic recording machines. To ensure a quantitative evaluation  
of the information recorded over time, a reduction of deviations, and a simpli-  
fication of service, the device contains a time code shaper connected directly  
and through the control block to distributors attached to the numeric code  
sensors, connected in turn to the corresponding AND circuits. The AND circuits  
are connected to the OR circuit. The outputs of the time code shaper are con-  
nected to the electromagnetic recording machines, and electromagnetic relays  
are connected to a pulse group generator. One illustration.

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USSR

UDC: 517.9:539.3

GOROSHKO, O. A., NOVIKOV, V. D.

"On Dynamic Forces in an Elastic Filament Entrained by a Free Body"

Mat. fizika. Resp. mezhved. sb. (Mathematical Physics. Republic Interdepartmental Collection), 1970, vyp. 8, pp 64-67 (from RZh-Matematika, No 5, May 71, Abstract No 5B505)

Translation: This study of the motion of an elastic filament entrained by a projectile is based on Fredholm's integral equation of the second kind of the non-classical type with time-variable symmetric kernel and limits of integration. The problem as formulated is solved by Yu. M. Mitropol'skiy's asymptotic method. It is shown that the amplitudes of the dynamic forces in the filament increase in proportion to the square root of the length of the filament. Author's abstract.

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1/2 039 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--EFFECT OF PLASTIC DEFORMATION AND RECOVERY ON THE MAGNETIC  
PROPERTIES OF TRANSFORMER STEEL CRYSTALS -U-  
AUTHOR--(05)-BRASHEVAN, G.A., VEKSLER, A.Z., DRUZHININ, V.V., MOLOTOLOV,  
B.V., NOVIKOV, V.F.  
COUNTRY OF INFO--USSR  
SOURCE--IZV. AKADE. NAUK. SSSR, SER. FIZ. 1970, 34 (2): 322-3  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR  
TOPIC TAGS--PLASTIC DEFORMATION, TRANSFORMER STEEL, METAL CRYSTAL, SHEET  
METAL, MAGNETIC PROPERTY, MAGNETOSTRICTION, CRYSTAL DISLOCATION, ALLOY  
COMPOSITION, METAL ROLLING, SILICON STEEL, HYDROGEN  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1997/1529 STEP NO--UR/0048/70/034/002/0322/0328  
CIRC ACCESSION NO--AP0120310  
UNCLASSIFIED

2/2 039

UNCLASSIFIED

PROCESSING DATE--23OCT7

CIRC ACCESSION NO--AP0120310

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. LARGE CRYSTALS CUT OUT FROM TRANSFORMER METAL SHEET, 0.35 MM THICK, REFINED IN H (850DEGREES, 4 HR) AND UNDER VACUUM (1100DEGREES, 4 HR) WERE STUDIED. AFTER REFINING, THE STEEL CONTAINED SI 2.9, C 0.004, N 0.005, AND S 0.003PERCENT. STUDIES OF THEIR MAGNETIC STRUCTURE (BY THE POWDER METHOD), AS WELL AS OF DISLOCATION DS. WERE MADE AT THE SAME SPOT OF THE SAMPLE. SP. CORE LOSSES, COERCIVE FORCE, H SUBC, AND MAGNETOSTRICTION WERE MEASURE. ROLLING IN THE (001) DIRECTION PRODUCED A STRUCTURE WITH A MUCH LOWER DISLOCATION D. THAN ROLLING IN THE (110) DIRECTION. HOWEVER, WITH SMALL DEFORMATIONS H SUBC (001) LARGER THAN H SUBC (110). THE SIMULTANEOUS ACTION OF STRESSES AND DISLOCATION DS. LED TO A CHANGE IN DELTA H SUBC. A LINEAR CORRELATION WAS NOTED BETWEEN H SUBC AND SP. CORE LOSSES. FACILITY: TSNIICM IM. BARDINA, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 621.357.8.035.4:669.14(088.8)

SHTAN'KO, V. M., LIPKIN, Ya. N., NOVIKOV, V. G., VOLKOV, Yu. M., STRIZHAK, G. K., RABINOVICH, O. Ya., ZIMOVETS, V. G., DANILOV, A. M., MATVEYEV, Yu. M., MEDNIKOV, Yu. A.

"Electrolyte for Electrochemical Polishing of Products"

USSR Author's Certificate No 306186, Filed 28/10/69, Published 21/07/71, (Translated from Referativnyy Zhurnal, Khimiya, No 3, 1972, Abstract No 3 L283 P from the Resume).

Translation: An electrolyte for electrochemical polishing of products, for example of stainless steel, differing in that in order to improve the quality of polishing and intensify the process, a foam suppressor is introduced to the electrolyte with the following relationship of components (in wt.%): orthophosphoric acid 30-70,  $H_2SO_4$  10-40,  $H_2O$  10-30 and above 100%. Surfactants based on peptide and polypeptide salts, 1-10 g/l, foam suppressor 0.001-1 g/l. Polymethylsiloxane liquid is used as the foam suppressor.

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USSR

NOVIKOV, V. I.

"The Use of Semantically Redundant Information for Estimation of the State of Complex Systems in One Class"

Kibernet. i vychisl. tekhn. Resp. mezhved. sb. [Cybernetics and Computer Equipment. Republic Interdepartmental Collection], 1973, No 19, pp 13-23 (Translated from Referativnyy Zhurnal - Kibernetika, No 8, 1973, Abstract No 8 V704 by V. Mikheyev)

Translation: It is noted that the procedures studied for determination of the quantity of semantically redundant information in complex systems of this class can solve the problem of estimation of their state into stages. In the first stage, the reserve of negentropy (entropy taken with the inverse sign) in the system is determined. In the second stage, a procedure for estimation of the state of the complex system is sought which, with minimal expenditures, allows the maximum quantity of semantically redundant information to be removed from the system. Illustrative examples are presented.

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USSR

UDC 546.821'261:541.67

NESHPOR, V. S., NIKITIN, V. P. and NOVIKOV, V. I., Institute of Semiconductors, Academy of Sciences USSR

"Superconductivity and Residual Resistance of Titanium Carbide"

Moscow, Izvestiya Akademii nauk SSSR, Neorganicheskiye materialy, Vol 7, No 10, Oct 71, pp 1743-1747

Abstract: The study concerns the electric conductivity and Hall effect of titanium carbide in its homogeneity region at below-zero temperatures as well as its transition to the superconductive state in strong magnetic fields. The experimental titanium carbide was of the composition  $Ti_{0.91}Ti_{0.46}$ . The study revealed a very weak temperature dependence of the conductivity at 300-4.2°K, indicating that the specific resistance at room temperature is almost completely governed by residual resistance. Both the resistance and the Hall coefficient decrease with the carbon content in the  $TiC_x$  phases. With a sufficiently high concentration of carbon defects, the increase in the density of states near the Fermi level makes possible the appearance of a superconducting gap in the energy spectrum

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NESHPOR, V. S., et al, Izvestiya Akademii nauk SSSR, Neorganicheskiye materialy, Vol 7, No 10, Oct 71, pp 1743-1747

which might explain the transition of homogeneous titanium carbides (observed only in compositions  $\text{TiC}_{0.52}$  and  $\text{TiC}_{0.46}$ ) to the superconductive state. (4 illustrations, 23 bibliographic references).

USSR

UDC 614.73

BAD'IN, V. I., SAYAPINA, R. Ya., ALFEROV, M. V., and NOVIKOV, V. I., Moscow

"The Problem of Evaluation of Radiation Hazards from Nonequilibrium Emissions"

Moscow, Gigiyena i Sanitariya, No 7, Jul 70, pp 51-54

Abstract: A method is proposed for assessing the amount of radiation absorbed by lung tissue under nonequilibrium conditions of the daughter products of emission disintegration. The method greatly simplifies and shortens the monitoring process. It is based on the fact that the maximum permissible concentration of nonequilibrium emissions is equal to the ratio of the balanced maximum permissible concentration to the degree of equilibrium of the second decay product (RaB, ThB, AcB). Under industrial conditions, the degree of equilibrium of the daughter products of emissions varies as a function of the number of times the area is ventilated.

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1/2 030 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--SUPERCONDUCTIVITY OF ZIRCONIUM NITRIDE SINGLE CRYSTALS -U-  
AUTHOR--(03)-NESHFOR, V.S., NOVIKOV, V.I., SOKOLOV, V.V.  
COUNTRY OF INFO--USSR  
SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER. 1970, 6(3), 425-8  
DATE PUBLISHED-----70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--SUPERCONDUCTIVITY, ZIRCONIUM NITRIDE, SINGLE CRYSTAL,  
SUPERCONDUCTING MATERIAL, CRYSTAL IMPURITY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1996/1824 STEP NO--UR/0363/70/006/003/0425/0428  
CIRC ACCESSION NO--AP0118788  
UNCLASSIFIED

2/2 030

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0118788

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SINGLE CRYSTAL ZN NITRIDE SAMPLES OF THE COMPN. ZRN SUBO.95 GROWN BY CHEM. GAS PHASE DEPOSITION FROM A VAPOR GAS MIXT. N SUB2 PLUS ZRCL SUB4 PLUS H SUB2 UNDER THE CONDITIONS OF SLOW GAS STREAM RATE HAVE AN ACICULAR SHPAE WITH THE AXIS OF THE NEEDLE COINCIDING WITH THE (111) CRYSTALLOGRAPHIC DIRECTION. AT A PERFECT SURFACE SHAPE OF THE SAMPLE, A SHARP TRANSITION WAS DETD. FOR THEM INTO THE SUPERCONDUCTING STATE AT 9.6DEGREE SK. THE CRIT. MAGNETIC FIELD FOR THESE SAMPLES IS 2.5-3.0 KOE. FOR NONHOMOGENEOUS LENGTH AND IMPERFECT STRUCTURE OF THE SURFACE OF THE ZR NITRIDE CRYSTALS, THEIR TRANSITION INTO THE SUPERCONDUCTING STATE PROCEEDS AT A SOMEWHAT LOWER TEMP. THE T SUBC VALUE FOR ZR NITRIDE SINGLE CRYSTALS IS CLOSE TO THE CORRESPONDING T SUBC VALUE FOR POLYCRYST. SAMPLES OF THE SAME CHEM. COMPN. THE DISRUPTION OF THE SUPERCOND. BY A MAGNETIC FIELD TAKES PLACE OVER A WIDER FIELD STRENGTH INTERVAL FOR POLYCRYST. SAMPLES COMPARED TO SINGLE CRYSTALS. INVESTIGATION OF THE SINGLE CRYSTALS STUDIED BY ELECTRON MICROPROBE SHOWED THAT THEY DO NOT CONTAIN IMPURITIES OF THE FOLLOWING ELEMENTS: FE, MG, HF, TI, NB, W, AND SI. LOCALIZED IMPREGNATIONS OF CU, C, AND O, AND A CU CONTG. PHASE (ZR PLUS CU) WERE OBSD. AT THE SURFACE OF THE SAMPLES. THE LATTER INCLUSIONS WERE NOT PRESENT IN BULK OF THE SAMPLE. FACILITY: GOS. INST. PRIKL. KHIM., USSR.

UNCLASSIFIED

USSR

UDC: 546.831'17:537.312.62

N  
NESHFOR, V.S., NOVIKOV, V.I., SOKOLOV, V.V. State Institute of Applied Chemistry, Leningrad, State Committee for Chemistry; Institute of Semiconductors Leningrad, Academy of Sciences USSR

"Superconductivity of Zirconium Nitride Single Crystals"

Moscow, Neorganicheskiye Materialy, Vol 6, No 3, 1970, pp 425-428

Abstract: The superconductivity of zirconium nitride crystals produced by crystallization of the nitride from the gas phase was studied. X-ray diffraction phase analysis showed only one phase of cubic mononitride, with a lattice period of 4.612 Å. The crystals, with the composition  $ZrN_{0.95}$ , grown by chemical gas phase precipitation from a vapor-gas mixture ( $N_2 + ZrCl_4 + H_2$ ) at low gas flow velocity were needle shaped with needle axis corresponding to the  $\langle 111 \rangle$  crystallographic direction. A sharp transition to the superconducting state at 9.6°K was noted, and the critical magnetic field was 2.5-3.0 koe. With structural imperfections on the crystal surface, the transition to the superconducting state is at a somewhat lower temperature. The value of  $T_K$  for the single crystals is similar to the corresponding value for polycrystals of the same chemical composition. Disruption of superconductivity by a magnetic field occurs over a broader interval of intensities for the polycrystalline specimens than for the single crystals.

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USSR

UDC 576.858.8

NOVIKOV, V. K., KIMAYEV, V. Z., and ATABEKOB, I. G., Moscow State University  
Imeni M. V. Lomonsova

"Reconstitution of Nucleoprotein of Potato Virus X"

Moscow, Doklady Akademii Nauk SSSR, Vol 204, No 5, 1972, pp 1259-1262

Abstract: Potato virus X was used to study the mechanism of reconstitution, as the protein of this virus consists of two components of different weights which do not spontaneously repolymerize in the absence of RNA. The virus, obtained from infected thorn apples (*Datura stramonium* L.), was dissociated into protein and infective RNA by incubation with  $\text{CaCl}_2$ . After purification, the reconstitution was carried out by incubation of a mixture of the two components in a low ionic strength buffer. The ratio of total nucleoprotein yield observed spectrophotometrically from one cycle of differential centrifugation to the theoretical maximum was used to measure the effectiveness of reconstitution. This ratio was highest at a concentration of 0.01 M for tris-HCl buffer, and 0.001 M for phosphate buffer. In distilled water, or buffers of lower ionic strength, the ratio  $D_{260}/D_{280}$  of the nucleoprotein differed from that of the crude virus. However the ratio returned to normal following reprecipitation in the ultracentrifuge or treatment with pancreatic RNAase.

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USSR

NOVIKOV, V. K., et al., Doklady Akademii Nauk SSSR, Vol 204, No 5, 1972, pp 1259-1262

The nucleoprotein yield sharply declined with increasing salt concentration. Studies were also made of the kinetics of optimum pH (6.5-7.0) of the process at 20°C. In addition, electron microscopy showed particles of varying length, with a diameter equal to that of crude potato virus X. Infectivity of the reconstituted viruses was low. The UV spectra of reconstituted and crude viruses were very close, and their antigenicity identical, even though the protein component is only antigenically related to the crude virus. The reconstituted material was observed to be heterogeneous and to have a lower coefficient of sedimentation of analytical centrifugation. The fact that low ionic strength is optimal for this process suggested that the RNA-protein interaction is basically ionic. Particles with similar appearance under electron microscopy, identical antigenicity, similar UV spectra and similar yields to reconstituted potato virus were obtained by mixing virus protein with RNA of broom grass mosaic, tobacco mosaic, or barley streak mosaic viruses, or Escherichia coli ribosomal RNA. However none of these showed infectivity.

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NOVIKOV, V. M.

JPRS 55582

30 March 1972

THEORY OF CAVITY REACTORS WITH COMPRESSIBLE FUEL

Selected articles from Russian-language journal by V. L. Blinkin and V. M. Novikov: K Teorii Polostnykh Reaktorov so Szhimayemym Toplivo, IAE 2139 and 2140, 1971, Moscow.

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[I - USSR - L]

- 3 -

# DYNAMIC CHARACTERISTICS WITH OSCILLATIONS IN FUEL DENSITY

[Article by V. L. Blinln, V. M. Novikov; Moscow, K Teorii Polostnykh Reaktorov so Shimsyemym Gotuchim, TAE 2139, Russian, 1971, pp 1-17].

## 1. Introduction

The interest felt in reactors with a gas core and external moderator<sup>1</sup> is related to the possibility of their utilization for various special purposes (for example in MID generators [1], power installation [2], etc., [3], [4]). The static properties of these reactors have been studied both theoretically [5] and experimentally [6]. Significantly less is known concerning the dynamic properties of these systems, although certain peculiarities related to fuel compressibility may have a significant influence on the dynamic characteristics of these reactors.

It is known that when fuel density fluctuates in a reactor, an additional effective reactivity results, which is dynamic in nature [7]. The calculation of this reactivity was performed for a homogeneous reactor in [7], [8], [9].

As we know, in a reactor with an external moderator, which is a heterogeneous system, the dependence of dynamic reactivity on reactor parameters is generally different.

The study of the relationship of the breeding factor to the time-dependent effective boundary conditions at the surface of the core of a cavity reactor was the subject of [10]. The model studied in this work is applicable only for slow changes in core zone parameters, and the relationship of these parameters to the effective boundary conditions is not studied.

<sup>1</sup> These reactors are sometimes called "cavity reactors."

# DYNAMIC REACTIVITY AS A FUNCTION OF SYSTEM PARAMETERS

[Article by V. L. Blinkin, V. M. Novikov; Moscow, K. Teoril Polostnykh Reaktorov so Shlaevym Goryuchim, IME 2140, Russian, 1971, pp 1-20].

## §1. Introduction

In an earlier work [1], it was demonstrated that the dynamics of cavity reactors with fluctuations in fuel density can be fully described by two dynamic characteristics:  $\Delta k_{dyn}$  -- the dynamic reactivity and  $\psi(\vec{r}, t)$  -- the variable component of neutron flux.

A general expression for  $\Delta k_{dyn}$  with an accuracy to terms on the order of  $(\omega)^2$  has been produced by the method of the adiabatic theory of perturbations.<sup>1</sup>

$$\Delta k_{dyn} = -\frac{1}{\beta} \left\{ \int_0^T (1 + \lambda_1) dt - \frac{1}{\omega} \left[ S_{00}(\tau) + \sum_{n=1}^{\infty} \frac{S_{nn}(\tau) S_{nn}^*(\tau)}{2(n - \lambda_1)^2 - 1} \right] \right\} \quad (1.1)$$

The purpose of this work is to study the dependence of the value and sign of  $\Delta k_{dyn}$  as well as the variable component  $\psi(\vec{r}, t)$  on the type of fluctuations in fuel density, moderator parameters and system geometry. In §2, we study centrally symmetrical (in a spherical cavity reactor) and axisymmetrical (in a cylindrical reactor) acoustical oscillations (type (II) oscillations).

<sup>1</sup> Symbols used in this article are the same as in [1].

1/2 013 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--ON THE DISSOCIATION CROSS SECTION FOR SLOW COLLIDING EXCITED  
MOLECULES -U-  
AUTHOR--(03)-DOZOROV, A.A., KUDRIN, L.P., NOVIKOV, V.M.  
COUNTRY OF INFO--USSR  
SOURCE--ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58,  
NR 6, PP 1955-1958  
DATE PUBLISHED-----70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--EXCITED ELECTRON STATE, MOLECULAR INTERACTION, EXCITATION  
CROSS SECTION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--2000/2243 STEP NO--UR/0056/70/058/006/1955/1958  
CIRC ACCESSION NO--AP0125821

UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0125821

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CROSS SECTION FOR THE PROCESS  
(AB) PLUS M YIELDS A PLUS B PLUS M IS CALCULATED; HERE (AB) AND M ARE  
MOLECULES IN THE EXCITED ELECTRON STATES. THE CROSS SECTION CAN BE  
EXPRESSED IN TERMS OF WELL KNOWN EFFECTIVE CROSS SECTIONS FOR  
PHOTODISSOCIATION OF MOLECULES; AT THERMAL ENERGIES IT IS OF THE ORDER  
OF  $10^{-14}$  CM<sup>2</sup>.

UNCLASSIFIED

USSR

UDC: 621.319.7:532.529.5

KIRKO, I. M. and NOVIKOV, V. N.

"Utilization Limits of the Dipole Approximation for Dielectrophoresis Computation"

Riga, Izvestiya Akademii Nauk Latvyskoy SSR, No 1, 1972, pp 18-24

Abstract: From the formula for the pondermotive force acting on a dielectric in an electric field with a dielectric permeability differing from that of the surrounding medium, the formula for the first dipole approximation is obtained. A second formula is derived for the pondermotive force by considering the electric field in which the dielectric is placed to be formed by two plates at an angle to each other. The authors of the present paper describe experiments to check these two formulas. In the experiments, the force acting on a paraffin sphere in a wedge-shaped condenser formed by two electrode plates is determined. To the plates is applied a high voltage, measured by a kilovoltmeter, and the sphere hangs between them by a capron thread. The mass of the sphere is  $14.691 \pm 0.0005$  grams in a volume of  $16.392 \pm$

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U.S.R.

KIRKO, I. M. et al, Izvestiya Akademii Nauk Latviyskoy SSR,  
No 1, 1972, pp 18-24

0.005 cm<sup>3</sup>, and the thread has a diameter of  $2.5 \cdot 10^{-3}$  cm and a length of 2.3 m. With voltages of from 2000 to 28,000 v applied to the plates, the sphere deviates from its natural position. The deviation is measured by an optical system. A diagram of the experimental setup is given, together with curves for the dielectrophoretic force as a function of different variables.

2/2

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I/2 018 UNCLASSIFIED PROCESSING DATE--18SEP70  
TITLE--TEMPERATURE DEPENDENCE OF THE ELECTRICAL CONDUCTIVITY OF  
POLYCRYSTALLINE MATERIALS CONTAINING VANADIUM DIOXIDE -U-  
AUTHOR--NOVIKOV, V.N.  
COUNTRY OF INFO--USSR  
SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER. 1970, 6(1) 96-9  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--VANADIUM OXIDE, THERMAL EFFECT, ELECTRICAL CONDUCTIVITY,  
POLYCRYSTAL, OXIDE CERAMIC  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1988/0596 STEP NO--UR/0363/70/006/001/0096/0099  
CIRC ACCESSION NO--AP0105579  
UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0105579

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. RECTANGULAR SAMPLES MEASURING 15 TIMES 4 TIMES 1 MM IN SIZE AND PREPD. BY CONVENTIONAL CERAMIC TECHNOLOGY WERE USED FOR THE PRESENT STUDY. THE TEMP. DEPENDENCE OF POLYCRYST. MATERIALS CONTG. V SUB2 O SUR4 IS CHARACTERIZED BY A DIFFUSE PHASE TRANSITION REGION AT 55-75DEGREES, AND BY THE PRESENCE OF A HYSTERESIS OF 2.5-3.0DEGREES. THE PRESENCE OF THE HYSTERESIS LEADS TO AMBIGUITY AS TO THE INTERRELATION BETWEEN THE RESISTANCE AND THE TEMP. IN THE TRANSITION REGION, AND TO A DECREASE IN THE TEMP. COEFF. VALUE UPON A DECREASE IN THE RECORDED TEMP. DROP. THE CHANGE IN THE RESISTANCE DURING THE MONOTONIC CHANGE IN THE TEMP. IS SMOOTH, AND IN THE CASE WHEN STEPS ARE PRESENTED, THE VALUES OF THESE STEPS DOES NOT EXCEED 10 PRIME NEGATIVE2 DEGREE.

UNCLASSIFIED

USSR

UDC 612.82.014.43-08:612.54

SUVOROV, V. V., and NOVIKOV, V. P., Chair of Human and Animal Physiology,  
Vladimir Pedagogical Institute imeni P. I. Lebedev-Polyanskiy

"Thermal Deficiency During Cooling of the Brain"

Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, Vol 71, No 3,  
Mar 71, pp 23-26

Abstract: In order to investigate some aspects of the heat balance maintained by mammals, the heads of anesthetized laboratory dogs were cooled with the water-stream Kholod-2F apparatus, while body temperature was being recorded from the scalp, the brain (at depths of 7, 20 and 30 mm) and the rectum (representing internal body temperature). Total body hypothermia was produced in steps of 1°C down to 28°C, indicating that this method was able to raise the total heat loss above total heat production and conservation. A temperature gradient developed between the various areas under investigation, so that at the minimum rectal temperature of 28°C, the brain temperature was 27.1° at 30 mm, 24.6° at 20 mm, and 15.9° at 7 mm, while scalp temperature was 15.4°. As time passed, the thermal index (ratio of the physical to the physiological temperature gradient) decreased, indicating a diminishing heat loss due to smaller heat conduction and greater thermal insulation from

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USSR

SUVOROV, V. V., and NOVIKOV, V. P., Byulleten' Eksperimental'noy Biologii i Meditsiny, Vol 71, No 3, Mar 71, pp 23-26  
reduced tissue metabolism and blood flow. Cranial cooling is an effective method of producing hypothermia for clinical purposes.

2/2

USSR

UDC: 531.754:621.039.85

KREYNDLIN, I. I., MUKHIN, S. S., NOVIKOV, V. S., PRAVIKOV, A. A.

"The RP-60 Radioactive-Isotope Densimeter"

Tr. VNII Radiats. Tekhn. [Works of All-Union Scientific Research Institute for Radiation Technology], 1972, No 7, pp 80-86 (Translated from Referativnyy Zhurnal Metrologiya i Izmeritel'naya Tekhnika, No 12, 1972, Abstract No 12.32.1187, by V. S. K.).

Translation: A general view and schematic diagram are presented for an apparatus for measurement of density of soils by a gammascopic method. The operation of the densimeter (D) is based on transmission of a beam of gamma rays, for example, those provided by  $\text{Co}^{60}$  with an activity of 0.16  $\mu\text{C}$ , through the object being tested, and measurement of the attenuation of the rays by the object being studied, in this case soil. The radioactive D includes a DPG-2 sensor, a converter, an I-1 intensimeter (with strip chart recorder) and P-1 power supply with nominal voltage 12 v. The measurement range of the D is 1-2.3 g/cm; the measurement error is 0.08 g/cm; the sensor has a probe diameter of 61 mm; measurement depth is 5 m; the operating temperature ranges from -10 to +40° C. The RP-60 radioactive D has passed state testing and is recommended for series production. 3 figures, 2 biblio. refs.

1/1

USSR

UDC 621.396.933:527.61

NOVIKOV, VL. S., NOVIKOV, V. S.

"Error Accumulation and Correction Processes in Navigational Systems"

Sb. nauch. tr. Kiev. in-t inzh. grazhd. aviatsii (Collection of Scientific Works of Kiev Institute of Civil Aviation Engineering), 1970, vyp. 3, pp 22-35 (from RZh-Radiotekhnika, No 5, May 72, Abstract No 5G59)

Translation: An expression is derived which defines the mean number of navigation system error blips under the assumption that the errors are random processes which undergo discontinuous variations at certain points in time during correction. There are 2 illustrations and a 3-entry bibliography.

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USSR

UDC 621.396.933:527.61

NOVIKOV, VL. S., NOVIKOV, V. S.

"Error Accumulation and Correction Processes in Navigational Systems"

Sb. nauch. tr. Kiev. in-t inzh. grazhd. aviatsii (Collection of Scientific Works of Kiev Institute of Civil Aviation Engineering), 1970, vyp. 3, pp 22-35 (from RZh-Radiotekhnika, No 5, May 72, Abstract No 5G59)

Translation: An expression is derived which defines the mean number of navigation system error blips under the assumption that the errors are random processes which undergo discontinuous variations at certain points in time during correction. There are 2 illustrations and a 3-entry bibliography.

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1/2 051 UNCLASSIFIED PROCESSING DATE--11SEP70  
TITLE--EFFECT OF NUCLEAR RADIATION ON THE PHYSICOMECHANICAL PROPERTIES OF  
PAINT ENAMEL COATINGS -U-  
AUTHOR--KNYAZEV, V.K., NOVIKOV, V.S., IZOTOV, G.T., GLUSHCHENKO, V.M.,  
SEREGINA, G.P.  
COUNTRY OF INFO--USSR  
SOURCE--LAKOKRASOCH. MATER. IKH PRIMEN. 1970, (1) 42-4  
DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--PROTECTIVE COATING, PLASTIC COATING, RADIATION EFFECT, GAMMA  
IRRADIATION, HARDNESS, POLYVINYL CHLORIDE, EPOXY RESIN, ENAMEL, AMINE  
DERIVATIVE, RADIATION RESISTANT PLASTIC/(U)GF020 UNDERCOATING, (U)AGIOS  
UNDERCOATING, (U)PF220 ENAMEL, (U)INK06 NITRATED GLYPYAL RESIN, (U)EP74T  
EPOXY MELAMINE RESIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1989/0549

STEP NO--UR/0303/70/000/001/0042/0044

CIRC ACCESSION NO--AP0107154

UNCLASSIFIED

2/2 051

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0107154

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE STABILITY WAS STUDIED OF MULTILAYERED COATINGS AGAINST GAMMA IRRADN. AT DOSES OF SMALLER THAN OR EQUAL TO 100 MEGARADS APPLIED AT 10 PRIME5 R-HR. THE COATINGS WERE COMPOSED OF GF-020, FL-03K, OR AG-10S UNDERCOATINGS AND 1-2 COATS OF THE FOLLOWING ENAMELS: PF-220 (POLYPHTHALATES) WITH ML-25 (MELAMINE ALKYD RESIN), 2062F GLYPTAL RESIN, NKO-6 (NITRATED GLYPTAL RESIN), EP-74T (EPOXY-MELAMINE RESIN), OR KHSE-23 (CHLORINATED POLY(VINYL CHLORIDE) RESIN). NONE OF THESE COATINGS WITHSTOOD 100 MEGARAD DOSES. THE MOST RESISTANT, AS DETD. BY MEASURING HARDNESS, ELASTICITY, AND IMPACT STRENGTH BEFORE AND AFTER THE IRRADN., WERE GLYPTAL RESINS AND PF 220.

UNCLASSIFIED

1/2 020  
UNCLASSIFIED  
PROCESSING DATE--13NOV70  
TITLE--CHANGES IN THE END PORTION OF THE VENTRICULAR ECG COMPLEX UNDER THE  
EFFECT OF PHYSICAL LOAD -U-  
AUTHOR--NOVIKOV, V.T.  
COUNTRY OF INFO--USSR  
SOURCE--KARDIOLOGIYA 10(1): 130-135. ILLUS. 1970  
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--EXERCISE, ELECTROCARDIOGRAPHY, CORONARY BLOOD CIRCULATION,  
DIAGNOSTIC MEDICINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3004/0542

STEP NO--UK/0495/70/010/001/0130/0135

CIRC ACCESSION NO--AP0131165

UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0131165

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MASTER'S AND VELOERGOMETRY TESTS IN DETECTING LATENT CORONARY INSUFFICIENCY (IN MAN) ARE ASSESSED. THE PERFORMANCE IN MASTER'S TEST WAS CONVERTED INTO KILOGRAMMETERS IN ORDER TO MAKE A MORE ACCURATE COMPARISON OF THE LOAD TEST RESULTS POSSIBLE. IN MASTER'S TEST THE LOAD NOT ALWAYS REVEALS THE PRESENCE OF LATENT CORONARY INSUFFICIENCY. AN ANALYSIS OF THE RESULTS DERIVED FROM VELOERGOMETRIC TESTS IN 65 PATIENTS WITH LATENT CORONARY INSUFFICIENCY LED TO THE CONCLUSION THAT THE U WAVE INVERSION AND DEPRESSION OF THE TU CONNECTION APPEAR AS EARLY DIAGNOSTIC SIGNS OF CORONARY INSUFFICIENCY.

UNCLASSIFIED

USSR

UDC 621.371.029.4

MAKAROV, G. I. and NOVIKOV, V. V.

"Propagation of Ultra-Long Waves in the Earth-Ionosphere Waveguide Channel (Review)"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl. Sekts. 1 (Tenth All-Union Conference on the Propagation of Radio Waves; Report Theses; Section 1--collection of works) "Nauka," 1972 pp 537-550 (from RZh--Radiotekhnika, No 10, 1972, Abstract No 10A351)

Translation: A physical model of the lower ionosphere is described and methods are given for its theoretical analysis, in addition to the characteristics of ultra-long wave fields in the near and far zones. Attention is directed to the fact that the existing theory unsatisfactorily describes some characteristics of ultra-long wave propagation. A. L.

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USSR

UDC 539.3+534.231.1

NOVIKOV, V. V., KAZANOVA, G. T.

"On the Effect of the Finite Dimensions of Plates and Bands on the Stressed State Around a Curved Opening"

V sb. Kratk. tezisy dokl. k Konf. po povrezhdeniyam i ekspluat. nadezhnosti sudovykh konstruktsiy, 1972 (Brief Subjects of Papers at the Conference on Breakdown and Operational Reliability of Ship Designs, 1972 -- Collection of Works), Vladivostok, 1972, pp 98-103 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3V103)

Translation: The paper is a supplement to an experimental study conducted by photooptical methods to explain the actual limits of the use of theoretical solutions valid for infinite plates for rectangular openings located at the band of the plate. Actual experimental data and the technique for conducting the experiments are not given. 10 ref. B. P. Kishkin.

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USSR

UDC 629.12.011.753:539.4.012.2

BARABANOV, N.V., NOVIKOV, V.V.

"Special Features of Stress Distribution in the Vicinity of Stern Doors and Other Openings in the Ship Hull"

Leningrad, Sudostroyeniye, No 1, 1971, pp 12-14

Abstract: The article deals with the determination of the maximum stresses in the vicinity of the stern doors and other hull openings on the basis of the concentration coefficient, and with selection of the optimal forms of rounding. 5 figures, 1 table. 3 bibliographic entries.

1/1

1/2 048 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--EXPERIENCE IN AERIAL INVESTIGATION OF VOLCANIC SURFACES ON  
KAMCHATKA -U-  
AUTHOR-(04)-LIPSKIY, YU.N., SHTEYNBERG, G.S., POSPERGELIS, M.M., NOVIKOV,  
V.V.  
COUNTRY OF INFO--USSR  
SOURCE--STATE ASTRONOMICAL INSTITUTE; MOSCOW, ASTRONOMICHESKIY ZHURNAL,  
VOL 47, NO 2, 1970, PP 411-419  
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS, EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--VOLCANO, SPECTROGRAPH, LIGHT POLARIZATION, IR SPECTROMETER,  
LIGHT REFLECTION, AERIAL RECONNAISSANCE/(U)ASP 15 SPECTROGRAPH, (U)AN2  
AIRCRAFT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3001/0960

STEP NO--UR/0033/70/047/002/0411/0419

CIRC ACCESSION NO--AP0126608

UNCLASSIFIED

2/2 048

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0126608

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THIS PAPER GIVES THE RESULTS OF AN AERIAL INVESTIGATION OF VOLCANIC SURFACES ON KAMCHATKA BY POLARIZATION AND SPECTRAL METHODS. THE SURVEY WAS MADE AT ALTITUDES UP TO 1 KM WITH STANDARD SOLAR ILLUMINATION ABOARD AN AN-2 AIRCRAFT. AN ASP-15 SPECTROGRAPH WAS USED IN OBTAINING THREE SPECTRAL CHARACTERISTICS: TOTAL RADIATION INTENSITY, DEGREE OF POLARIZATION AND ORIENTATION OF THE POLARIZATION PLANE: THE SPECTRAL RANGE 410-674 MU WAS COVERED. THE USE OF AN INFRARED SPECTROMETER ASSEMBLED ON THE BASIS OF A ZMR-2 INSTRUMENT MADE IT POSSIBLE TO STUDY THE BRIGHTNESS DISTRIBUTION OF SOLAR LIGHT IN THE SPECTRUM WHICH WAS REFLECTED FROM VOLCANIC SURFACES IN THE SPECTRAL RANGE FROM 0.3 TO 2.5 MU. A CLOSE SIMILARITY WAS FOUND BY A COMPARISON OF THE POLARIZATION AND SPECTRAL CHARACTERISTICS OF THE STUDIED SURFACES AND LUNAR SURFACES (FOR THE SEAS) IN THE CASE OF A SLAG FIELD. FRESH BASALTIC LAVA FLOWS CAN BE ANALOGUES OF THE SURFACE COVER OF THE BOTTOM OF TYCHO CRATER. IT WAS NOTED THAT THE PRESENCE OF LARGE ROCK FRAGMENTS ON THE INVESTIGATED SURFACE LEADS TO A NEUTRAL DEPENDENCE OF THE DEGREE OF POLARIZATION ON WAVELENGTH. THE POLARIZATION AND SPECTRAL CHARACTERISTICS OBTAINED FOR WATER, HARDWOOD AND SOFTWOOD FORESTS ARE COMPARED.

UNCLASSIFIED

1/2 038 UNCLASSIFIED PROCESSING DATE--020CT70  
TITLE--CURRENT STATE OF INVESTIGATIONS OF VLF PROPAGATION IN THE EARTH  
IONOSPHERE WAVEGUIDE CHANNEL -U-  
AUTHOR--(03)-MAKAROV, G.I., NOVIKOV, V.V., ORLOV, A.B.  
COUNTRY OF INFO--USSR  
SOURCE--IZVYUZ. RADIOFIZIKA, VOL. 13, NO. 3, 1970, P. 321-355  
DATE PUBLISHED-----70  
SUBJECT AREAS--ATMOSPHERIC SCIENCES, ELECTRONICS AND ELECTRICAL ENGR.,  
EARTH SCIENCES AND OCEANOGRAPHY  
TOPIC TAGS--VLF PROPAGATION, WAVEGUIDE, ELECTROMAGNETIC FIELD, IONOSPHERE,  
EARTH PLANET, APPROXIMATION METHOD  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1991/0847 STEP NO--UR/0141/70/013/003/0321/0355  
CIRC ACCESSION NO--AP0110568  
UNCLASSIFIED

2/2 038

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0110568

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DESCRIPTION OF THE MAIN FEATURES OF ELECTROMAGNETIC FIELDS IN THE VLF SPECTRAL RANGE EXTENDING FROM 1 TO 60 KHZ. THE CURRENT STATE OF THE GENERAL THEORY FOR THESE WAVELENGTHS IS REVIEWED IN TERMS OF PROPAGATION IN THE EARTH IONOSPHERE WAVEGUIDE, EFFECTS OF IONOSPHERIC IRREGULARITIES, AND THE INFLUENCE OF THE DAYTIME AND NIGHTTIME SEGMENTS OF THE WAVEGUIDE. RECENTLY DEVELOPED APPROXIMATE METHODS OF CALCULATION ARE DESCRIBED WHICH MAKE IT POSSIBLE TO CONDUCT QUALITATIVE INVESTIGATIONS. FORMULAS ARE GIVEN FOR ANALYZING THE PHASE VELOCITY ATTENUATION OF NORMAL WAVES AS FUNCTIONS OF FREQUENCY AND WAVEGUIDE PARAMETERS. THE MAIN RESULTS OF PUBLISHED NUMERICAL CALCULATIONS ARE DESCRIBED AND COMPARED WITH EXPERIMENTAL DATA. FACILITY: LENINGRADSKII GOSUDARSTVENNYI UNIVERSITET, LEVINGRAD, USSR.

UNCLASSIFIED

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USSR

UDC: None

MAKAROV, G. I., NOVIKOV, V. V., and ORLOV, A. B.

"Present State of ULF Propagation Research in the Earth-Ionosphere Waveguide Channel"

Gorkiy, Izvestiya VUZov SSSR Radiofizika, Vol. 13, No. 3, 1970, pp 321-355

Abstract: This is a review article summarizing the most recent research in ultra low-frequency electromagnetic wave propagation. It is divided into three sections; the first deals with the general theory of ULF; the second with approximate research methods into the behavior of characteristic quantities; the third with the results of the theoretical computations and their comparison with experimental data. The ULF range is here defined as extending approximately from 1 to 60 KHz. Interest in ULF has been lively since the 50's, and its possibilities for communication on a global scale, especially for frequencies in the 10-20 KHz range, has aroused a great deal of interest. An important characteristic of

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USSR

MAKAROV, G. I., et al, Izvestiya VUZov SSSR Radiofizika, Vol. 13,  
No. 3, 1970, pp 321-355

such fields is their high stability compared to the unpredictability of the irregular ionospheric variations. This suggests, according to the authors, that they might be useful in phase navigation systems.

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USSR

UDC 541.64:547.39:674.03

LEBEDEV, V. T., SUMINOV, S. I., SHIRYAYEVA, G. V., KARPOV, V. L., and NOVIKOV, V. Ya.

"Effect of the Addition of Organophosphorus Compounds on the Polymerization of Methyl Methacrylate in Cellulose"

Moscow, Vysokomolekulyarnyye Soyedineniya, Vol 14, No 2, Feb 72, pp 422-426

Abstract: The effect of various classes of organophosphorus compounds on the kinetics of radiation induced polymerization of methyl methacrylate [MMA] in cellulose was studied. The influence of dialkyl-, and trialkyl phosphites and trialkyl phosphates, as well as the effect of the size of alkyl radical within a group on the polymerization rate of MMA in wood was found to be increasing in the order: dialkyl phosphites < trialkyl phosphites < trialkyl phosphates, and within the radical group: methyl < ethyl < butyl analog. It was demonstrated that the concentration of tributyl phosphate [TBP] in MMA has a positive effect on the combustibility of the wood-plastic material [WPM]: a 30% content of TBP imparts fire retarding properties on the WPM. Study of the physical-mechanical properties of WPM containing various concentrations of TBP showed that optimal resistance to static bending across the fibers and to shearing along the fiber length is shown in WPM prepared from a 9:1 mixture of MMA:TBP.

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1/2 020 UNCLASSIFIED PROCESSING DATE--09UCT70  
TITLE--EFFECT OF LOW TEMPERATURE ANNEALING ON THE TEXTURE OF THE PRIMARY  
RECRYSTALLIZATION OF A SINGLE CRYSTAL OF SILICIDED IRON -U-  
AUTHOR-(03)-LIVSHITS, B.G., NOVIKOV, V.YU., ROSHCINA, L.Y.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. FIZ. 1970, 34(2), 249-54

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--METAL TEXTURE, METAL SINGLE CRYSTAL, IRON, SILICIDE,  
ANNEALING, METAL RECRYSTALLIZATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1995/0188

STEP NO--UR/0048/70/034/002/0249/0254

CIRC ACCESSION NO--AP0115892

UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--090CT7C

CIRC ACCESSION NO--AP0115892

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BY USING X RAY AND METALLOGRAPHIC METHODS IT WAS SHOWN THAT IN A COLD ROLLED SILICIDED FE SINGLE CRYSTAL (110) (001) THE RECRYSTN. NUCLEI APPEAR 1ST ON THE NEUMANN BANDS AND THEREAFTER ON THE STRAIN BAND BOUNDARIES. THE LATTER HAVE A FASTER GROWTH RATE. THE ORIENTATION OF THE GRAINS APPEARING ON THE NEUMANN BANDS IS (320) (001), (210) (001), AND (310) (001), ON THE STRAIN BAND BOUNDARIES MAINLY (110) (001); INSIDE THE STRAIN BANDS (111) (112) AND (320) (001), AND (210) (001). ANNEALING AT 450DEGREES FOR 13 MIN BEFORE THE PRIMARY RECRYSTN. SLOWS DOWN THE GROWTH OF THE (110) (001) GRAINS. THIS LEADS TO A DECREASE OF THIS COMPONENT IN THE RECRYSTN. TEXTURE AND THE COMPONENTS (320) (001), (210) (001), AND (310) (001) ARE STRONGLY ENHANCED.

FACILITY: MOSK. INST. STALI SPLAVOV, MOSCOW, USSR.

UNCLASSIFIED

1/2 017 UNCLASSIFIED PROCESSING DATE--090CT70  
TITLE--EFFECT OF SECOND ROLLING TEMPERATURE ON THE TEXTURE OF SILICON IRON  
DEFORMATION AND RECRYSTALLIZATION -U-

AUTHOR--(03)-LIVSHITS, B.G., NOVIKOV, V.YU., KOSHKINA, L.A.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. FIZ. 1970, 34(2), 289-91

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--METAL TEXTURE, SILICON ALLOY, IRON ALLOY, METAL  
RECRYSTALLIZATION, METAL ROLLING, METAL DEFORMATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/0191

STEP NO--UR/0048/70/034/002/0289/0291

CIRC ACCESSION NO--AP0115895

UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0115895

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECTS OF THE CONDITIONS OF SECOND ROLLING (DEFORMATION RATIO AND TEMP.) ON THE DEFORMATION AND RECRYSTN. TEXTURE OF SI CONTG. IRON WAS STUDIED TO FIND RELATIONS GOVERNING THE RELATIVE AMTS. OF GRAINS WITH THEIR CUBIC PLANE COINCIDENT WITH THE ROLLING PLANE AND GRAINS ORIENTED AT ANGLES LESS THAN OR EQUAL TO 45DEGREES WITH RESPECT TO THE DIRECTION OF ROLLING. SHEET SPECIMENS 0.55, 0.7, AND 1.1 MM THICK ANNEALED AT 1130DEGREES AND EXHIBITING A GRAIN SIZE OF 1.8-2.3 MM AND A DEFINED, HOMOGENEOUS TEXTURE WERE ROLLED TO 0.35 MM (DEFORMATION RATIOS 36, 50, AND 68PERCENT) AT 20, 200, AND 300DEGREES. SUBSEQUENTLY THE SPECIMENS WERE VACUUM ANNEALED AT 670, 900, AND 1200DEGREES. THE DEFORMATION AND PRIMARY RECRYSTN. TEXTURES OF THE SURFACE LAYERS WERE STUDIED BY X RAYS AND THE TEXTURE OF SPECIMENS ANNEALED AT HIGH TEMPS. WAS EXAMD. METALLOGRAPHICALLY. THE TEXTURES ARE LISTED FOR EACH OF THE TREATMENT VARIANTS. THE TEXTURE OF COLD ROLLED AND SUBSEQUENTLY ANNEALED SPECIMENS SHOWED A COMPONENT WITH THE (100) PLANE AND (011) ORIENTATION, DEVIATING CONSIDERABLY (BY AN ANGLE LARGER THAN 20DEGREES) FROM THE DIRECTION OF ROLLING. THE CONTENT OF THIS COMPONENT WAS REDUCED FROM 30 TO 2PERCENT UPON INCREASING THE DEFORMATION RATIO FROM 36 TO 68PERCENT, AND WAS NEGLIGIBLE IN SPECIMENS ROLLED AT ELEVATED TEMPS. FACILITY: MOSK. INST. STALI SPLAVOV, MOSCOW, USSR.

UNCLASSIFIED

USSR  
Beryllium

USSR

UDC 669.725'794-541.134

BUTOROV, V. P., NICHKOV, I. F., NOVIKOV, YE. A., RASPOPIN, S. P., and  
SHTOL'TS, A. K., Ural Polytechnic Institute, Department of the Metallurgy of  
Rare Metals

"Thermodynamics of Beryllium-Yttrium Alloys"

Ordzhonikidze, Izvestiya Vysshikh Uchebnykh Zavedeniy--Chernaya Metallurgiya,  
No 4, 1973, pp 86-89

Abstract: Tests on determining the thermodynamic magnitudes of Y-Be alloys was  
reduced to a study of the electromotive force of the galvanic element which was  
determined as the difference

$$\mathcal{E} = \varphi_{\text{alloy}} - \varphi_Y,$$

where  $\varphi_{\text{alloy}}$  and  $\varphi_Y$  are the equilibrium potentials of the alloy and metallic  
equilibrium, respectively, relative to the chlorine electrode of comparison.  
From measurements of the emf of Y-Be alloys containing from 4.1 to 40.8 wt% Y,  
it was found that there is a direct relationship of alloy emf to Kelvin tempera-  
ture. Tables were compiled from experimental data which showed the activity  
and coefficients of activity of yttrium and Be-Y alloys and thermodynamic  
1/2

USSR

BUTOROV, V. P., et al., Izvestiya Vysshikh Uchebnykh Zavedeniy--Chernaya Metallurgiya, No 4, 1973, pp 86-89

properties of alloy YBe<sub>13</sub>. From x-ray phase analysis of the studied alloys it was established that they consist of two phases: the intermetallic compound YBe<sub>12</sub> and pure beryllium. 1 figure, 3 tables, 4 bibliographic references.

2/2

- 1 -

USSR

UDC 669.713.72

SEREBRYAKOV, G. A., NICHKOV, I. F., RASPOPIN, S. P., NOVIKOV, Ye. A.

"Cathode Processes in Electrolytic Separation of Aluminum From Halide Salt Melts"

Tsvetnye Metally, No 1, 1971, pp 34-37.

Abstract: The polarization of liquid zinc and solid tantalum cathodes was studied during electrolytic separation of aluminum from chloride-fluoride melts. It is demonstrated that at low current densities, the separation of aluminum on zinc involves some depolarization due to the formation of liquid metal solutions. It is impossible to establish the magnitude of depolarization, since the sector corresponding to melt formation on the curves cannot be separated. The cathode yield per current during separation of aluminum on zinc may reach 81-100%, depending on electrolysis conditions.

1/1

USSR

NOVIKOV, YE. A. (Moscow)

"Intermittence and Scale Similitude in the Structure of a Turbulent Stream"

Moscow, Prikladnaya Matematika i Mekhanika, No 2, March-April 1971, pp 266-277

Abstract: Intermittence is nonuniformity of the distribution of eddy formations in a stream. The indicator may be the modulus or the square of the eddy field, the rate of energy dissipation, or kindred values, which are quadratic with respect to velocity and temperature gradients (concentrations of a passive admixture). A distinction should be made between intermittence in a sporadically turbulent flow (in particular, in the vicinity of the boundary between the turbulent and the nonturbulent region) and intermittence in a developed turbulent flow. The cause of intermittence is the instability of eddy formations and the therewith connected random nature of the process of the fractionation of large eddies into constantly smaller ones. In an investigation of the characteristics of intermittence, it is important above all to try to seek out universal laws which would not depend upon the large-scale features of the flow nor, if possible, upon the Reynolds number (if it is sufficiently large; a developed turbulent flow is dealt with below). In the present work, which constitutes a development of a previously published memorandum, it is shown that universal laws exist for the statistical

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USSR

NOVIKOV, YE. A., Moscow, Prikladnaya Matematika i Mekhanika, No 2, March-April 1971, pp 266-277

characteristics of the fractionation coefficient. With regard to the formulas for the spectrum and distribution of the probabilities of the initial fields, actually these formulas are obtained by means of a certain extrapolation and therefore have an approximate and nonuniversal character. It is further shown that the probability distribution for the fractionation coefficient tends toward a logarithmically normal one when the ratio of the averaging scales is increased. However, this tendency is a rather slow one, determined by the logarithm of the scale ratio or by the logarithm of the corresponding Reynolds number. Moreover, the moments of the fractionation coefficient do not tend toward the corresponding expressions which proceed from the limiting logarithmically normal law (the situation is a rather exceptional one for processes realizable in nature). This circumstance holds true not only for fractionation coefficients, but also even for fields of the energy-dissipation type; this is confirmed experimentally. The existing level of experimental research fully makes it possible to determine the statistical characteristics of the fractionation coefficient, and thereby to bring theory and experiment together to the maximum possible extent. Let us note that the Marseilles lecture of A.N. Kolmogorov, made in 1962, contained definite hypotheses of

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USSR

NOVIKOV, YE. A. (Moscow), Prikladnaya Matematika i Mekhanika, No 2, March-April 1971, pp 266-277

similitude, expressed in terms of a velocity-difference ratio. This ratio may turn into infinity, which somewhat hinders theoretical and experimental research. Nevertheless, it is possible that universal laws exist for such relative characteristics of turbulent flow, to which the fractionation coefficient also belongs. 1 table, 29 bibliographic entries.

3/3

1/2 026 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--CHANGES WITH TEMPERATURE OF THE ELASTIC PROPERTIES OF SODIUM  
BROMIDE SINGLE CRYSTALS -U-  
AUTHOR-(02)-NOVIKOV, YE.N., BOTAKI, A.A. N  
COUNTRY OF INFO--USSR  
SOURCE--IZV. VYSSH. UCHEB. ZAVED., FIZ. 1970, 13(2), 139-41  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, PHYSICS  
TOPIC TAGS--THERMAL EFFECT, ELASTIC MODULUS, SODIUM BROMIDE, SINGLE  
CRYSTAL  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1994/1782 STEP NO--UR/0139/70/013/002/0139/0141  
CIRC ACCESSION NO--AT0115611

UNCLASSIFIED

2/2 026

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AT0115611

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ELASTICITY CONSTS., THE ANISOTROPY  
FACTOR, AND COMPRESSIBILITY OF NBR SINGLE CRYSTALS WERE DETD. EXPTL.  
AND ARE GIVEN FOR 20 TEMPS. AT 293-573DEGREE SK. FACILITY:  
TOMSK. POLITEKH. INST. IM. KIROVA, TOMSK, USSR.

UNCLASSIFIED

I/3 025 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--FUTURE SPACE SYSTEMS WILL ASSIST THE FISHING INDUSTRY -U-  
AUTHOR--NOVIKOV, YU.  
COUNTRY OF INFO--USSR  
SOURCE--MOSCOW, IZVESTIYA, 2 JULY 1970, P 3.  
DATE PUBLISHED--02JUL70  
SUBJECT AREAS--SPACE TECHNOLOGY, EARTH SCIENCES AND OCEANOGRAPHY,  
BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--OCEAN CURRENT, OCEAN TEMPERATURE, FISHING, RECONNAISSANCE  
SATELLITE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3006/1612 STEP NO--UR/9003/70/000/000/0003/0003  
CIRC ACCESSION NO--AN0135247  
UNCLASSIFIED

2/3 025

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AN0135247

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. CANDIDATE OF TECHNICAL SCIENCES YU. NOVIKOV SUGGESTS THAT SPACE TECHNOLOGY WILL PLAY AN IMPORTANT PART IN EXPANDING THE AREAS OF ACTIVITY OF THE FISHING FLEET AND MAY PROVIDE NEW INFORMATION ON THE CHARACTERISTICS OF OCEAN CURRENTS, TEMPERATURES, WATER DENSITIES, ETC. ABOUT 80 PERCENT OF THE PRODUCTS PROVIDED BY THE SOVIET FISHING FLEET ARE CAUGHT IN COASTAL REGIONS. SINCE THE INTENSITY OF FISHING IN THESE AREAS IS HIGH AND CANNOT BE EXPECTED TO INCREASE SIGNIFICANTLY, IT IS FELT THAT THE INDUSTRY MUST EVENTUALLY MOVE FARTHER INTO THE OPEN SEAS. IT IS HERE, CLAIMS THE AUTHOR, WHERE SATELLITES CAN PROVIDE USEFUL INFORMATION. SINCE THE MOVEMENT AND DISTRIBUTION OF FISH SHOALS DEPEND GREATLY ON THE STATE OF WATER MASSES, SATELLITES ALONE CAN PROVIDE THE COVERAGE REQUIRED TO CHART TEMPERATURES AND CURRENTS THROUGHOUT THE WORLD OCEAN. THE AUTHOR BELIEVES THAT SATELLITES WILL BE ABLE TO DETECT THE OIL FILMS LEFT BY SOME TYPES OF COMMERCIAL FISH ON THE WATER SURFACE AND WILL ALSO PROVIDE A "PLANKTON RECONNAISSANCE" SERVICE. SPACE TECHNOLOGY WILL ALSO HELP TO BROADEN OUR CONCEPTS OF THE DYNAMICS OF OCEAN WATER MASSES, WILL MAKE IT POSSIBLE TO CHART SEASONAL AND ANNUAL CHANGES IN SURFACE CHARACTERISTICS OF THE WORLD OCEAN AND, WITH THE ASSISTANCE OF AUTOMATIC FLOATING STATIONS, WILL AID IN THE GLOBAL AND OPERATIONAL STUDY OF CHANGES IN CHEMICAL COMPOSITION, SALINITY AND DENSITY. THE AUTHOR CONCLUDES THAT MANY DIFFICULTIES LIE IN THE PATH OF CREATING A SPACE SYSTEM FOR STUDYING AND UTILIZING THE OCEAN'S RESOURCES BY SUCH A SYSTEM WILL BE DEVELOPED IN THE FUTURE.

UNCLASSIFIED

3/3 025 UNCLASSIFIED PROCESSING DATE--27NOV70  
CIRC ACCESSION NO--AN0135247  
ABSTRACT/EXTRACT--HE NOTES THAT SOME INVESTIGATIONS CONCERNING THE STUDY  
OF THE OCEAN FROM SPACE WERE MADE BY THE CREW OF "SOYUZ 9".

UNCLASSIFIED

NOVIKOV, Yu. A.

DETERMINING ETHYL ALCOHOL IN WATER CONDENSATES BY THE GAS  
CHROMATOGRAPHIC METHOD

Article by Yu. A. Novikov and A. V. Vikhlyantsev; Moscow, Akademiya Voprosy Kemiicheskoy Biologii i Meditsiny (Current Problems in Space Biology and Medicine), Russian, 1971, pp 323-325.

A determination of the concentration of compounds with a low boiling point in water condensates is of great interest for medicine and toxicology.

The analysis of water condensates is complex due to the following factors:

1. The water peak strongly blurred in most of the liquid phases overlaps many components.
2. When water samples are introduced there is a change in the time of retention of the dissolved components due to the formation of a mixed liquid phase (liquid phase + water) in the initial part of the column.

3. In a number of cases there is a decrease in response of the detector to the dissolved compounds, emitting simultaneously with the water peak. The latter is particularly conspicuous in work with argon detectors.

In analyzing ethyl alcohol in water condensates we used a "Tsvet" gas chromatograph, model 1-64, with a flame-ionization detector.

As the working conditions we selected the following:

column: length 1 m, diameter 4 mm,  
packing: five parts by weight of Knp ether (tristhor  
IN-600 carrier (fraction 0.25-0.5 mm), sintered at a temper-  
ature of 300° for three hours.

SPR 56,499

141

14 JULY 72

USSR

UDC 621.382.5.002

ANTROPOV, V.D., NIKISHIN, V.I., NOVIKOV, YU.I., BULGAKOV, S.S., SKLYAR, A.A.

"Microwave Transistor Prepared By The Method Of Ion Implantation"

V sb. Novoye v tekhn. poluprovodn. proiz-va (New Semiconductor Production Technology--Collection Of Works), Voronezh, Voronezh University, 1971, pp 152-157 (from RZh:Elektronika i yeye primeneniye, No 4, April 1972, Abstract No 4B423)

Translation: The production is described of a microwave n-p-n<sup>+</sup> transistor with the use of a method of ion doping. The ion doping was conducted on IUJ-3 equipment. The transistors were prepared on epitaxial Si films with a resistivity of 2 ohm.cm. B<sup>11</sup> and P<sup>31</sup> were used as the doping admixture. Doping was done at room temperature. Transistors obtained by the combined ion-diffusion method and by the ion doping method only were compared. It is shown that with the aid of the latter method transistors can be obtained with a frequency of 1-2 GHz with developed power on the order of 1 watt. 12 ref. S.I.

1/1

USSR

UDC: 621.791.793:546.821

GRABIN, V. F., Candidate of Technical Sciences, NOVIKOV, YU. K., Engineer, GUREVICH, S. M., Doctor of Technical Sciences, KOMPAN, YA. YU., Candidate of Technical Sciences, NOVIKOVA, D. P., Candidate of Technical Sciences, Institute of Electric Welding imeni Ye. O. Paton, Academy of Sciences of the Ukrainian SSR, CHERKASOV, N. I., Engineer, Tashkent Aviation Plant imeni Chkalov

"Structure and Properties of the Weld Zone During the Electro-Slag Welding of High-Strength Titanium Alloy"

Kiev, Avtomaticheskaya Svarka, No 9, Sep 73, pp 20-23

Abstract: The authors study the reasons for the reduced impact strength in the weld zone during the electro-slag welding of titanium alloy; ways are also sought for increasing ductility. The joints were studied with edges 60 mm thick which were done by electro-slag welding at 1700-2000 amps and 24-25 v, using the AN-T4 flux. Metallographic and x-ray analyses of the weld zone metal in its state after welding show that the metal structure is of the martensite alpha prime phase and residual beta phase type. The results show that the reduction of the impact strength in the weld zone during the electro-slag welding of an alloy of the titanium-vanadium-molybdenum-chromium-iron-zirconium system is conditioned by polygonization which is conditioned by a reversible alpha to beta phase transition and by the development of welding stresses during cooling. It is also shown that annealing at 750°C increases the impact strength of the joints.

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USSR

UDC 621.791.793:546.821

KOMPAN, YA. YU., GUREVICH, S. M., and NOVIKOV, YU. K., Institute of Electric Welding imeni Ye. O. Paton, and GREBEN', K. A., Institute of Gas, Academy of Sciences Ukr SSR

"Molten Bath Bubbling in the Electroslag Welding of Titanium Alloys"

Kiev, Avtomaticheskaya Svarka, No 10, Oct 72, pp 15-16

Abstract: A study was made to determine the optimum depth of gas jet penetration into the weld bath in the electroslag welding of VT1 titanium alloy with a thickness of 40 mm. The gas bubbles remove nonmetallic inclusions from the bath and allow the fluxes to better react with the oxides in the metal bath. The formula used to determine optimum gas jet penetration, proposed by K. A. Greben', was:

$$h = \omega \sqrt[3]{d/g\gamma_M}$$

where  $\omega$  -- jet velocity at the instant of entering the metal bath, m/sec;  
 $\gamma$  -- gas density, kg/m<sup>3</sup>; d -- jet diameter, m; g -- acceleration of gravity, m/sec<sup>2</sup>,  
 $\gamma_M$  -- liquid metal density, kg/m<sup>3</sup>. For a bath temperature of 1900-2200°C the depth of gas penetration into the molten metal was 13 mm at 1900°C and 14 mm at 2200°C.

USSR

KOMPAN, YA. YU., et al., Avtomaticheskaya Svarka, No 10, Oct 72, pp 15-16

at 2200°C. Bubbling the weld bath with argon made it possible to obtain joints with a reduced oxygen and nitrogen content, increased ductility, and a finer grain structure in the seam metal. 2 figures, 2 tables, 4 equations.

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USSR

UDC 621.791.756.011

KOPMAN, YA. YU., NOVIKOV, YU. K., and CHERNENKO, I. A. (Electric Welding Institute imeni YE. O. PATON, Academy of Sciences Ukrainian SSR)

"Characteristics of Electrode Metal Transfer in Slag Welding With a Titanium Electrode of Large Cross Section"

Kiev, Avtomaticheskaya svarka, No 4, Apr 72, pp 29-30

Abstract: The objective of the study was to determine the effect of plate electrode feed rate, voltage, and slag bath depth on the transfer rate and the dimensions of electrode metal droplets. The base metal involved in the study was VT1 alloy with a 40-mm edge thickness, and the plate electrode metal was from the same titanium alloy and measured 35 x 8 mm in cross section. AN-T4 flux was used for preparing the slag bath. The optimum plate electrode feed rate for refining the weld metal is shown to be at about 4.2 m/hr. The nature of metal transfer in plate-electrode welding is governed primarily by the interphase tension at the droplet-electrode boundary and the force of gravity. (1 illustration, 2 bibliographic references)

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USSR

UDC 66.074.7:546.56

(2)

LASKORIN, B. N., YUZHINA, A. D., SMIRNOVA, N. M., SADOVNIKOVA, G. I., NOVIKOV, YU. P., and VITKOVSKAYA, A. A.

"Ion Exchanging Fibers and Fabrics . III. Extraction of Gold From Cyanide Solutions and From Pulps by Means of Ion Exchanging Fabrics"

Leningrad, Radiokhimiya, Vol 15, No 2, 1973, pp 236-240

Abstract: The possibility of extracting gold from cyanide solutions and pulps obtained after leaching out the gold containing ores by means of ion exchange fabrics has been studied. The capacity for gold of the medium and strongly basic anion exchange fabrics under static conditions (0.8-1.4 mg/g) is comparable to the capacity of the granular sorbent AM (1.74 mg/g). Under identical conditions the fabrics absorb 5.6 times less admixtures than the resin AM, the rate of gold absorption being 20-30 times faster than by the resin. The fabrics are easily regenerated with hydrochloric solutions of thiourea. Under dynamics conditions 62.2% of gold is removed from the fabric by three volumes of the regenerating solution.

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USSR

UDC 66.012.1

**N**  
NOVIKOV, YU. S., VLADIMIRSKIY, M. M.

"A Device for Checking Variation in the Standard Deviation of a Random Variable"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 4, 1970, p 99, patent No 260970, filed 12 May 68

Abstract: This Author's Certificate introduces a device for checking variation in the standard deviation of a random variable. The device contains two flip-flops, an electronic switch, two AND circuits, and a reversible binary counter. As a distinguishing feature of the patent, the device is simplified by connecting the reset terminal of the first flip-flop and the set terminal of the second flip-flop to the first input terminal, connecting the set terminal of the first flip-flop through the electronic switch to the second input terminal, connecting the counter input of the second flip-flop to the third input terminal, and connecting the first inputs of the AND circuits to the fourth input terminal. The second input of the first AND circuit is connected to the zero-output terminal of the first flip-flop.

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USSR

NOVIKOV, YU. S., et al., Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratzysy, Tovarnyye Znaki, No 4, 1970, p 99, patent No 260970, filed 12 May 68

the second input of the second AND circuit is connected to the set terminal of the first flip-flop, the inhibit inputs of the AND circuits are connected to the electronic switch input and the zero-output terminal of the second flip-flop, and the outputs of the first and second AND circuits are connected to the adding and subtracting inputs respectively of the reversible counter.

2/2

Environmental and Ecological Problems

USSR

UDC 613.164(47-21

SOLDATKINA, S. A., NOVIKOV, Yu. V., and YUDINA, T. V., Moscow Scientific Research Institute of Hygiene imeni F. F. Erisman, Moscow

"A Hygienic Assessment of the Effects of City Noise"

Moscow, Gigiyena i Sanitariya, No 3, Mar 73, pp 16-20

Abstract: Rats were exposed to the action of city traffic noises with an intensity of 80 dBA for 6 hrs per day during one month. Adverse effects of the noise on the nervous and cardiovascular systems were found to take place. Disturbances in ascorbic acid metabolism were induced which resulted in a decrease of the content of this vitamin in a number of organs (adrenals, brain, liver, kidneys, spleen, testes) during the initial part of the period of exposure, followed by an increase towards the end of this period. A decrease of the content of ascorbic acid in the adrenals may be regarded as indicating development of protective reactions forming a part of a general adaptation syndrome. The content of histamine in the brain increased by 87 percent towards the 15th day of exposure, dropping to 8.7 percent above that of controls on the 30th day. The permeability of the histohematic barriers of the kidneys was increased.

1/1

USSR

UDC 614.72:547.264

BAYKOV, B. K., GUSEV, M. I., NOVIKOV, Yu. V., and YUDINA, T. V., Moscow  
Scientific Research Institute of Hygiene imeni F. F. Erisman, Moscow

"The Biological Action of Butyl Alcohol as an Atmospheric Pollutant"

Moscow, Gigiyena i Sanitariya, No 2, Feb 73, pp 13-17

Abstract: In a study carried out on female rats, the effects of BuOH present in concentrations of 0.1, 1.0, and 20 mg/m<sup>3</sup> in the air were investigated. The air containing BuOH was passed for 92 days at a rate of 30 l./min through chambers into which the animals had been placed. The general condition and weight of the animals, their fertility, the latent period of the defense reflex reaction, the level of nucleic acids in the blood, the porphyrin metabolism, the activity of enzymes (oxidase, catalase, and diastase) in the blood, the utilization of O<sub>2</sub>, and the permeability of the histohematic barriers of organs were subjected to study in the course of the experiment. The results showed that BuOH in the concentration of 20 mg/m<sup>3</sup> produced pathological changes in the values of the indexes measured and therefore was toxic, whereas exposure of the animals to this substance in the two lower concentrations did not produce conditions or reactions that differed significantly from those shown by controls. Among the effects produced  
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USSR

BAYKOV, B. K., et al., Gigiyena i Sanitariya, No 2, Feb 73, pp 13-17

by BuOH in the toxic concentration were a lowering of fertility, wave-like changes in the latent time of the defense reflex reaction, a reduction of the content of catalase in the blood, an increase in the diastase activity, and a reduction in the utilization of  $O_2$ . There was no decrease in the weight of the animals vs. controls as a result of exposure to BuOH.

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USSR

UDC 612.388.014.46-087.45

SMIRNOVA, R. D.; NOVIKOV, Yu. V.; YUDINA, T. V.; KOS'MINA, L. F.;  
TAMBOVTSEVA, A. M.; Candidates of Medical Sciences, Moscow  
Scientific Research Institute of Hygiene imeni F. F. Erisman

"Permeability of the Histochematic Barriers and Some Biochemical  
Indices After the Combined Effect of a Number of Substances"

Moscow, Gigiyena i Sanitariya, No 7, 1971, pp 19-23

Abstract: Radioisotope ( $P^{32}$ ) study was conducted of the effects  
of chronic administration of six substances (isopropylbenzene  
and its hydroperoxide, propylbenzene, butylbenzene, acetophenone,  
and dimethylphenylcarbinol) on the permeability of various rat  
organs (liver, kidneys, spleen, pancreas, thyroid, adrenals,  
testes, hypophysis), blood catalast activity, vitamin (C and  
carotene) metabolism, and liver function. The combination of  
organic compounds was found to decrease the permeability of the  
histohematic barriers of the hypophysis and testes and, to a

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USSR

SMIRNOVA, R. D., Gigiyena i Sanitariya, No 7, 1971, pp 19-23

lesser extent, spleen and kidneys. Catalase activity and vitamin C content was lower while the carotene content was higher in the experimental animals than in the controls. Liver function (bromsulphalein test) was also impaired. However, the animals' external appearance, behavior, and weight changes were indistinguishable from the control during the nine months of the experiment.

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USSR

UDC 614.715.614.72

YELFIMOVA, YE. V., Candidate of Medical Sciences, GUSEV, M. I., Professor,  
NOVIKOV, YU. V., Doctor of Medical Sciences, YUDINA, T. V., SERGEYEV, A. N.,  
Candidate of Medical Sciences, Moscow Scientific Research Institute of Hygiene  
Imeni F. F. Erisman

"Study of the Combined Resorptive Effect of Atmospheric Pollution (Gas and  
Dust)"

Moscow, Gigiyena i Sanitariya, No 8, 1972, pp 11-15

Abstract: A study was made of the combined effect of sulfur dioxide, carbon monoxide, phenol and finely dispersed dust characteristic of the air pollution caused by ferrous metallurgy enterprises. Experimental studies were performed on white rats for 96 days in the presence of an aerosol with the following concentrations:  $\text{SO}_2$  0.05 mg/m<sup>3</sup>, CO 1 mg/m<sup>3</sup>, phenol 0.01 mg/m<sup>3</sup> and 0.15 mg/m<sup>3</sup> of dust. Significant changes took place in the animals with respect to all tests. The effect of the aerosol in a concentration of 0.5 mg/m<sup>3</sup> implies a reduction in the total nucleic acids and the permeability of the hematic barriers in the ovaries. One group of rats underwent stable changes in behavior and biochemical and physiological reactions. The total combinations of fractional concentrations of the substances with respect to their threshold values at a level less than one (0.76) has no effect on the animals.

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USSR

YELFIMOVA, YE. V., et al., Gigiyena i Sanitariya, No 8, 1972, pp 11-15

The combined rescriptive effect of small concentrations of sulfur dioxide, carbon monoxide, phenol and dust is characterized by the summation effect. In estimating the degree of pollution of the atmospheric air in samples taken around the clock, a level for which the total fractional concentration does not exceed 0.76 of the maximum permissible concentrations is recommended.

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USSR

UDC 612.388-064.612.014.46

YUDINA, T. V., and NOVIKOV, Yu. V., Moscow Scientific Research Institute of Hygiene imeni F. F. Erisman

"Change in the Permeability of Histoematic Barriers Under the Influence of Chemical Environmental Factors"

Moscow, Gigiyena i Sanitariya, No 11, Nov 71, pp 14-18

Abstract: A study was made of the permeability of histoematic barriers in the homeostatic organs and endocrine glands under the influence of carbon tetrachloride administered over a 7-month period and of the pesticides chlorophos and zineb administered over a 6-month period. The radioactive tracer method was used. Stress was created by uninterrupted swimming for 3 hours. The relative ratio of radioactivity (p32 and S35) in the tissue to radioactivity in the blood served as the permeability index. The first experiment was conducted with 35 male white rats, divided into three groups, each of which received graduated doses of CCl4 administered parenterally and by inhalation, and a 4th control group; half the animals were subjected to stress. The experiment showed that stress altered permeability of the histoematic barrier in all groups. The greatest change was observed in the adrenals, where increased permeability indicates greater hormonal activity. The control groups

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USSR

YUDINA, T. V., and NOVIKOV, Yu. V., *Gigiyena i Sanitariya*, No 11, Nov 71, pp 14-18

showed the greatest increases. The groups not subjected to stress showed no altered permeability under the influence of  $CCl_4$ . Another study was made of the effects of chlorophos and zineb on the distribution of  $S^{35}$  in organs and tissues. Doses of 1/5000, 1/500, and 1/50 LD<sub>50</sub> were administered to 42 male white rats divided into nine groups and subjected to stress. The greatest permeability was observed in the kidneys, the least in the brain. The first and second groups showed increased permeability in the secretory glands; the third group, decreased permeability in the endocrine glands. Permeability is thought to depend on the level of hormonal activity. Zineb lowers permeability in organs and endocrine glands. Combined doses of chlorophos and zineb resulted in decreased permeability in proportion to increased dosage, which is related to diminished hormonal activity.

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Acc. Nr:

AP0047339

Ref. Code: UR 0300

PRIMARY SOURCE: Ukrayns'kiy Biokhimichnyi Zhurnal, 1970,  
Vol 42, Nr 1, pp 97-101

EFFECT OF DENERVATION AND FOLLOWING STIMULATION  
ON THE CONTENT OF MIOFIBRILLAR PROTEINS.

Yu. G. Poddubnyak, A. A. Novikova

Department of Biochemistry, Medical Institute, Dnepropetrovsk

Summary

The effect was investigated of the muscle electrostimulation during one and three months after denervation on the renewal in them of the content of basic contractile proteins. It is established that in a month after denervation actomyosin, myosin and actin content in muscles decreases sharply. Its partial restoration is observed to three months. Stimulation of the denervated muscles considerably prevents the changes in the content of actomyosin, myosin and actin. Stimulation during three months after denervation is particularly effective. Both denervation and stimulation do not considerably affect the content of thiol groups of contractile proteins in the denervated muscles.

REEL/FRAME

19790865

NOVIKOVA, A. N.

SO: JPRS 53402  
18 JUL 71

UDC: 618.2-082(571.66)

THE ROLE OF THE OBSTETRICS DEPARTMENT AT THE OBLAST HOSPITAL IN IMPROVING  
OBSTETRICAL CARE FOR INHABITANTS OF KAMCHATSKAYA OBLAST

(Article by M.I. Denisovich, candidate of medical sciences, and A.N. Novikova,  
Kamchatskaya Oblast department of public health (headed by N.S. Kolesnikov,  
and obstetrics department (headed by A.N. Novikova) of Kamchatskaya Oblast  
Hospital (chief physician: P.D. D'yachenko); Moscow, Sovetskoye Zdravookhran-  
eniye, Russian, No 5, 1971, submitted 18 November 1970, pp 29-31)

The present stage of development of obstetrical care in our country is characterized by an increase in deliveries of rural residents at oblast and central rayon hospitals and decrease in deliveries in rural district hospitals or using the beds of field-obstetrical centers. This is related to the time in economic and cultural standard of living for the rural population, better railway system, development of transportation (including aviation), better qualification of medical workers, and better quality of diagnosis of complications during pregnancy.

This also applies to Kamchatskaya Oblast, in spite of its vast territory and great distance of populated settlements from oblast and rayon centers (see Table).

Of particular importance is hospitalization in the oblast and rayon hospitals from rural areas and workers' settlements for pregnant women with a poor obstetrical history and complicated course of pregnancy, with respect to skilled and, in a number of cases, specialized medical aid during delivery. The obstetrical departments of oblast hospitals play an important part in this, as the centers for highly skilled obstetrical aid in an oblast. In addition to organizational methodological, emergency and scheduled consultations in obstetrics, the population of oblast regions receives aid in these departments in the presence of the most complicated obstetrical and extragenital pathology, pathological deliveries are performed as well as surgical procedures at a qualitatively higher level.

To execute the order of the USSR Minister of Health, No 260 dated 14 August 1966, "On measures for further improving the quality of medical aid to pregnant women, before, during and after delivery" the Kamchatskaya Oblast department of public health has conducted a number of measures directed toward

1/2 015 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--FORMAZANS CONTAINING AN S-TETRAZINE RING -U-  
AUTHOR--(03)-POSTOVSKIY, I.YA., NOVIKOVA, A.P., YERSHOV, V.A.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. ORG. KHIM. 1970, 6 (5), 1104-7  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--CONDENSATION REACTION, ORGANIC AZINE COMPOUND, OPTIC PROPERTY,  
BENZENE DERIVATIVE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3006/1352 STEP NO--UR/0366/70/006/005/1104/1107  
CIRC ACCESSION NO--AP0135026  
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--13NOV70

2/2 015

CIRC ACCESSION NO--AP0135026  
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. CONDENSATION OF N SUB2 H SUB4 .H

SUB2 O WITH 3,AMINO,6, METHYL,S,TETRAZINE GAVE THE 3,HYDRAZINO ANALOG  
(I), WHICH WAS HEATED WITH BZH TO GIVE THE N-BENZYLIDENE DERIV. (II).

DIAZO COUPLING OF II WITH PHN SUB2 CL  
GAVE,1,(6,METHYL,S,TETRAZIN,3,YL),3,5, DIPHENYLFORMAZAN (III). A

SIMILAR METHOD WAS USED IN THE SYNTHESIS OF

1,(6,PHENYL,S,TETRAZIN,3,YL),3,5,DIPHENYLFORMAZAN (IV). III AND IV

HAVE CONSIDERABLY DEEPER COLORATION THAN P-MEC SUB6 H SUB4 NHN:CPHN:NPH  
OR P-PHC SUB6 H SUB4 NHN:CPHN:NPH.

FACILITY: URAL. POLITEKH.

INST. IM. KIROVA, SVERDLOVSK, USSR.

UNCLASSIFIED

1/2 013 UNCLASSIFIED PROCESSING DATE--09OCT70  
TITLE--STRUCTURE OF AROMATIC AND HETEROCYCLIC FORMAZANS. I. STRUCTURE AND  
ABSORPTION SPECTRA -U-  
AUTHOR-(05)-BEDNYAGINA, N.P., LIPUNOVA, G.N., NOVIKOVA, A.P., ZEYF, A.P.,  
SHCHEGOLEVA, L.N.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. ORG. KHIM. 1970, 6(3) 619-23  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--UV SPECTRUM, MOLECULAR STRUCTURE, CYCLIC GROUP, THIAZOLE,  
BENZIMIDAZOLE, PYRIDINE, ABSORPTION SPECTRUM  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1992/1582 STEP NO--UR/0366/70/006/003/0619/0623  
CIRC ACCESSION NO--AP0112576  
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--09OCT70

2/2 013

CIRC ACCESSION NO--AP0112576

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. UV SPECTRA OF RNHN:CR PRIME1 N:NR  
PRIME2 WERE RECORDED AND DISCUSSED (R, R PRIME1, R PRIME2 GIVEN): PH,  
H, PH; PH, ME, PH; P-O SUB2 NC SUB6 H SUB4, ME, P-O SUB2 NC SUB6 H SUB4;  
PH, PH, PH; PH, PH, P-ME SUB2 NC SUB6 H SUB4; PH, PH, P-O SUB2 NC SUB6 H  
SUB4; PH, P-O SUB2 NC SUB6 H SUB4, PH; PH, P-O SUB2 NC SUB6 H SUB4, P-O  
SUB2 NC SUB6 H SUB4; P-O SUB2 NC SUB6 H SUB4, PH, P-O SUB2 NC SUB6 H  
SUB4; 1,BENZYL,2,BENZIMIDAZOLINYL, ME, PH; 2, BENZOTHAZOLYL, ME, PH;  
2,BENZOXAZOLYL, ME, PH; 1,BENZYL,2, BENZIMIDAZOLYL, PH, PH;  
2,BENZOTHAZOLYL, PH, PH; 2,BENZOXAZOLYL, PH, PH;  
4,(2,PYRIDYL),1,2,4,TRIAZOLYL, PH, PH; AND 1, PHENYLTETRAZOLINYL, PH,  
PH.

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USSR

UDC 532.68

N  
DERYAGIN, B. V. (Corresponding Member, Academy of Sciences USSR); FEDYAKIN, N. N., and NOVIKOVA, A. V., (Institute of Physical Chemistry, Academy of Sciences USSR, Moscow, and the Serpukhov Higher Command Engineering School imeni Lenin Komsomol, Serpukhov, Moscow Oblast')

"On Mirror Reflection of Molecular Vapor and Supermolecular Flow in Fine Capillaries"

Moscow, Doklady Akademii Nauk SSSR (Proceedings of the Academy of Sciences USSR), Vol 193, No 3, 1970, pp 561-564

Abstract: The authors briefly review the limitations of the cosine rule of distributed reflection of molecules from cleaved alkali halide crystals and discuss the relations and conditions necessary for mirror reflection and the limiting angle of total mirror reflection.

An experiment is described in which water vapor escapes from a capillary having a radius of less than one micron. When the capillary is larger than the free path of a molecule, the rate of vapor flow follows the Knudsen equation. When the capillary is smaller, the flow is greater than that predicted by the Knudsen equation. Under certain conditions of vapor density, molecules collide with the

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DERYAGIN, B. V., et al, Doklady Akademii Nauk SSSR (Proceedings of the Academy of Sciences USSR), Vol 193, No 3, 1970, pp 561-564

wall at less than the critical angles and can bounce back and forth between the walls without colliding with other vapor molecules. The mirror angle for water vapor is found to be 5 to 7 degrees. The capillary experiments are intended to separate the mirror-reflected from the diffuse-reflected molecules. A theoretical relation is derived for the flow density of the vapor, and a proof, more direct than the one given in a previous paper, is presented. Basis for the proof is the fact that the pressure of a neutral gas affects the path length of the vapor molecules, and those that are reflected from the wall at less than the critical angle collide with molecules of the neutral gas before again striking the wall.

The rate of water vapor evaporation from a 56-micron capillary was measured at various pressures. The water-filled capillary, sealed at one end, was placed in a glass test chamber connected to a vacuum pump and containing silica gel. Following the experiment the moisture content of the gel was used to determine the vapor pressure. The diameter of the capillary was less than the free path length even at atmospheric pressure. Under these conditions the Knudsen

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DERYAGIN, B. V., et al, Doklady Akademii Nauk SSSR (Proceedings of the Academy of Sciences USSR), Vol 193, No 3, 1970, pp 561-564

relation ought to be valid. Between 200 and 760 mm Hg pressure the Knudsen relation does hold, following a linear curve; below 200 mm Hg the evaporation rate is markedly higher, but again it falls along a straight line. The curves represent the evaporation rate as a function of the reciprocal of the depth of the liquid meniscus in the capillary.

It is concluded that with respect to sufficiently small-bore capillaries there is a narrow air pressure interval at which Knudsen flow becomes supermolecular, and the flow rate is independent of air pressure.

Orig. art. has 3 figs. and 10 refs.

UDC: 621.791.793:546.821 (3)

USSR

GRABIN, V. F., Candidate of Technical Sciences, NOVIKOV, YU. K., Engineer, GUREVICH, S. M., Doctor of Technical Sciences, KOMPAN, YA. YU., Candidate of Technical Sciences, NOVIKOVA, D. P., Candidate of Technical Sciences, Institute of Electric Welding imeni Ye. O. Paton, Academy of Sciences of the Ukrainian SSR, CHERKASOV, N. I., Engineer, Tashkent Aviation Plant imeni Chkalov

"Structure and Properties of the Weld Zone During the Electro-Slag Welding of High-Strength Titanium Alloy"

Kiev, Avtomaticheskaya Svarka, No 9, Sep 73, pp 20-23

Abstract: The authors study the reasons for the reduced impact strength in the weld zone during the electro-slag welding of titanium alloy; ways are also sought for increasing ductility. The joints were studied with edges 60 mm thick which were done by electro-slag welding at 1700-2000 amps and 24-25 v, using the AN-T4 flux. Metallographic and x-ray analyses of the weld zone metal in its state after welding show that the metal structure is of the martensite alpha prime phase and residual beta phase type. The results show that the reduction of the impact strength in the weld zone during the electro-slag welding of an alloy of the titanium-vanadium-molybdenum-chromium-iron-zirconium system is conditioned by polygonization which is conditioned by a reversible alpha to beta phase transition and by the development of welding stresses during cooling. It is also shown that annealing at 750°C increases the impact strength of the joints.

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USSR

SOKOLOVA, L. I., VOROB'YEVA, L. I. and NOVIKOVA, G. B.

"Library of Standard Routines for Processing of Files of Economic Information"

Tr. NII Upravl. Mashin i Sistem [Works of Scientific Research Institute of Control Machines and Systems], 1973, No 7, pp 141-145 (Translated from Referativnyy Zhurnal Kibernetika, No 10, 1973, Abstract No 10V664)

Translation: One important element in the software system of an ACS is the set of standard procedures for machine processing of information in all stages of performance of the task. This article describes a library of procedures for processing of files of economic information. This library is written for the ASVT computer and has been tested in a number of typical control-system problems. The experience in application of similar sets of programs shows the sufficient completeness of the set of standard procedures for solution of common ACS problems, as well as the effectiveness of automation of programming using standard program libraries.

Author's view

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USSR

KAPITUL'SKAYA, T. S., SIDORKIN, V. I., NOVIKOVA, F. I., STARKOVA, Z. A.

"Toxicity of Allylisoithiuronium Chloride"

Tr. Tsentr. n.-i. i proyekt.-konstrukt. in-ta profilakt. pnevmokoniozov.  
i tekhn. bezopasn. (Works of the Scientific Research and Project Design  
Center of the Institute for Prevention of Pneumokonioses and Technical  
Safety), 1972, vyp. 7, pp 65-67 (from Referativnyy Zhurnal, 30F, Biologi-  
cheskaya Khimiya, No 18, 25 September 1973, abstract No 18F1728)

Translation: A new fluorine-containing reagent, allylisoithiuronium chloride,  
has a low toxicity but has a local irritating effect, and when introduced  
into the organism over a long period of time, even in small doses, results  
in a general poisoning.

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UDC 577.1:615.7/9

USSR

SIDORKIN, V. I., STARKOVA, Z. A., NOVIKOVA, F. I., KAPITUL'SKAYA, T. S.

"Toxicology of the Flotation Agent IMD-10"

Tr. Tsentr. n.-i. i proyekt.-konstrukt. in-ta profilakt. pnevmokoniozov i tekhn. bezopasn. (Works of the Central Research and Design and Construction Institute for the Prevention of Pneumonconiosis and Accidents), 1972, No 7, pp 75-77 (from RZh-Biologicheskaya Khimiya, No 17, Sep 73, Abstract No 17 F1932)

Translation: The new flotation agent IMD-10 is a highly toxic local irritant. After entering the bloodstream it attacks the viscera. It has cumulative properties.

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1/2 007 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--EFFECTIVENESS OF LIQUID COMPLEX FERTILIZERS BASED ON  
SUPERPHOSPHORIC ACID ON SOD PODZOLIC SOIL -U-  
AUTHOR-(03)-YANISHEVSKIY, F.V., PROKOSHEVA, M.A., NOVIKOVA, G.V.

COUNTRY OF INFO--USSR

SOURCE--AGROKHIMIYA 1970, (2), 3-14

DATE PUBLISHED-----70

SUBJECT AREAS--AGRICULTURE

TOPIC TAGS--SOIL CHEMISTRY, SOIL STRUCTURE, LIQUID FERTILIZER, WHEAT,  
CEREAL CROP, LEGUME CROP, PHOSPHORUS FERTILIZER, UREA

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3001/1892

STEP NO--UR/0485/70/000/002/0003/0014

CIRC ACCESSION NO--AP0127293

UNCLASSIFIED

2/2 007

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0127293

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE FERTILIZERS IN LIQ. OR SOLID FORM WITH VARYING COMPNS. (N:P SUB2 O SUB5:K SUB2 O EQUALS 1:1:, 10:34:0, OR 11:37:0) ON WHEAT, OATS, AND BEANS IN POT EXPTS. WERE EQUALLY EFFECTIVE AS MIXTS. OF SOLID FERTILIZERS BASED ON AMMONIUM ORTHOPHOSPHATE AS P SOURCE. IN FIELD EXPTS. ON ACID LIGHT CLAY SOD PODZOLS WITH POTATOES THE POLYPHOSPHATE IN EITHER FORM NEARLY EQUALLED AMMONIUM ORTHOPHOSPHATE OR MIXTS. OF UREA PLUS DOUBLE SUPERPHOSPHATE. FROM THE TREATED SOIL CONSIDERABLE POLYPHOSPHATE WAS EXTG. BY CONTINUOUS FRACTIONAL EXTN. WITH 0.01N HCL. FACILITY: RAMENSK. AGROKHM. OPYT. STA., RAMENSKOE, USSR.

UNCLASSIFIED

UDC 678.4.074:53

USSR

MAREY, A. I., SIDOROVICH, Ye. A., and NOVIKOVA, G. Ye., All Union Scientific Research Institute of Synthetic Rubber imeni S. V. Lebedev

"Dependence of the Physical Properties of Elastomers on Their Chemical Composition and Molecular Structure"

Moscow, Kauchuk i Rezina, No 2, 1971, pp 9-12

Abstract: For a number of years the All Union Scientific Research Institute of Synthetic Rubber has been performing research on the effect of peculiarities of the molecular structure and chemical nature of rubbery polymers on their glass transition temperature, elastic dynamic properties and crystallization ability. It has been found that the glass transition temperature is a linear function of the reciprocal value of the molecular weight of the polymer and linearly depends on the concentration of functional groups asymmetrically or statistically arranged in the polymer chain, the degree of this dependence being proportional to the interaction energy of the functional groups. The mechanical behavior of elastomers is primarily due to their relaxation properties, which depend on the internal mobility of the polymer chains. While the chemical structure of a polymer mainly determines the lower bound of the

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MAREY, A. I., et al, *Kauchuk i Rezina*, No 2, 1971, pp 9-12

manifestation of elastic properties, such parameters as molecular weight, molecular-weight distribution, space network density determine the visco-elastic behavior in the region of the highly elastic state. Elastomers may have a different degree of structural order according to the character of the macromolecular chain construction (e. g., in a cis or trans configuration) and chain stereoregularity. These factors also affect the temperature-frequency dependences of the viscoelastic properties of elastomers. The character of crystallization processes in elastomers is affected by microstructure purity, vulcanization network density and other factors. Accelerated methods have been developed for the kinetic study of crystallization, and the determination of the equilibrium crystalline state of vulcanizates by measuring their modulus of elasticity in compression and permanent tensile elongation. A study of the crystallization of polysiloxanes established that, in contrast to the general rule, the creation of a space vulcanization network up to a certain limit accelerates their crystallization. Only vulcanizates with a dense network crystallize more slowly than the initial polymers. As a result of findings on the effect of different molecular-structure parameters and molecular chain orientation in crystallization on the mechanical properties

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USSR

UDC: 662.997:621.316.544.4

NOVIKOVA, I. A., VIL'KOVA, S. M., and UMAROV, G. Ya.

"Investigating the Filtering Action of Light-Stabilized Coatings"

Tashkent, Geliotekhnika, No. 4, 1971, pp 56-59

Abstract: This article is the continuation of an earlier paper (Novikova, I. A., Geliotekhnika, 1971, No. 3) in which it was shown that the mechanism in light stabilizers of protective lacquer coatings reduces principally to transfer of the excitation energy from the polymer molecules to the light stabilizer molecules. The present paper considers the filtering action of light-stabilized coatings in the screening of solar light and the artificial light of a PRK-2 lamp in the wavelength range of 220-400 m $\mu$ , the range that is most harmful to most polymers. The authors found the intensity values of the light passing through the filter by computing the reduction of the relative intensity, for a particular wavelength, due to the absorption by the light stabilizer. Tables of the relative intensity distributions of the light emitted by the lamp and the sun, and the ratio of the radiation of the light source through

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NOVIKOVA, I. A., et al., Geliotekhnika, No 4, 1971, pp 56-59

coatings of three different types to the full flux, are given. The research showed that, by using the light-stabilized lacquer screen, the light stabilizer concentration can be regulated at will depending on the depth of photochemical transformations. The authors are associated with the Physico-Technical Institute, imeni S. V. Starodubtsev, Uzbek Academy of Sciences.

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